

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

EATON CORPORATION,

Plaintiff,

Case No. 03-74844

vs.

HON. GEORGE CARAM STEEH

ZF MERITOR LLC, ARVINMERITOR,
INC. and ZF FRIEDRICHSHAFEN AG,

Defendants.

ORDER REGARDING DEFENDANTS' AND PLAINTIFF'S
PETITIONS FOR REVIEW OF SPECIAL MASTER'S REPORT AND
RECOMMENDATIONS ON PLAINTIFF'S AND DEFENDANTS' MOTIONS FOR
SUMMARY JUDGMENT ON U.S. PATENT NOS. 4,899,279; 5,664,458 AND 5,624,350

The parties in this case filed six motions for summary judgment relating to three patents, which motions were referred to Special Master Davis by Order dated November 16, 2006:

(1) U.S. Patent 4,899,279

Plaintiff's Motion for Summary Judgment of Infringement

Defendants' Motion for Summary Judgment of Non-Infringement

(2) U.S. Patent 5,624,350

Plaintiff's Motion for Summary Judgment of Infringement

Defendants' Motion for Summary Judgment of Invalidity

(3) U.S. Patent 5,664,458

Plaintiff's Motion for Summary Judgment of Infringement

Defendants' Motion for Summary Judgment of Invalidity and Partial Non-Infringement

The Special Master issued his Report and Recommendations on February 22, 2007.

The parties filed objections to the Report, and the Court heard oral argument on those objections. Now, therefore,

The Court hereby adopts the Special Master's Report and Recommendations in part, and modifies it in part, as described below.

I. '279 Patent - Wheel Lockup Condition

A. Defendants' Petition for Review of Report's Grant of Summary Judgment to Plaintiff of Literal Infringement of Claim 15 by Original FreedomLine

The '279 patent explains during normal operation the rotational speed of the transmission output shaft is indicative of vehicle speed. In a skid or "wheel lockup" condition, the vehicle is still moving, but the drive wheels are not rotating, and the output shaft may no longer be indicative of vehicle speed. If the vehicle is stopped or is traveling at a very low speed, then the output shaft speed input signal is assumed to be representative of vehicle speed, and transmission shift decisions are permitted to proceed, regardless if ABS is active. If the wheels are rotating at a speed that is considered representative of the vehicle speed, then by definition a "wheel lockup condition" is not occurring. The '279 patent indicates that these situations can be safely ignored at Col. 6, Ins. 10-14:

. . . it is assumed that the vehicle has skidded down to a stop or at least a very low speed and the output shaft speed input signal is truly representative of vehicle speed. Transmission shift decisions are permitted to proceed . . .

The ITC found the original FreedomLine transmission literally infringed claim 15 of the '279 patent, and the Special Master agrees. Claim 15 requires that during a wheel lockup condition, the system must prohibit "all" gear change command output

signals. Defendants argue that the ITC did not address the starting gear shifts that the original system permits during a wheel lockup condition. Therefore, defendants contend that the system does not infringe because at least one required limitation of claim 15 is missing from the original FreedomLine system.

After careful consideration of the evidence and arguments, made both in the pleadings and before the Court on April 12, 2007, the Court finds literal infringement by the original FreedomLine system. The only time shifting is permitted by the original FreedomLine is at very low speeds or standstill, when starting gear shifts are permitted. This situation is carved out of the '279 Patent. The Court adopts the Special Master's recommendation that the original FreedomLine literally infringes claim 15 of the '279 patent.

B. Plaintiff's Petition for Review of Report's Grant of Summary Judgment for Defendants that Redesigned FreedomLine Does Not Infringe Claim 15

Plaintiff argues that the Special Master erred in granting in part defendants' motion for summary judgment that the redesigned FreedomLine system does not infringe claim 15, either literally or under the doctrine of equivalents. The Court disagrees with plaintiff and adopts the conclusions of the Special Master.

The redesigned FreedomLine transmission allows for one downshift during an ABS event. Based on this fact, the ITC and the Special Master both found no literal infringement of the '279 Patent. Plaintiff objects to this conclusion because there are certain circumstances where the redesigned FreedomLine prohibits all shifts. Plaintiff points out that when a downshift is in progress and an ABS occurs, further downshifting is prohibited; during a toggle situation, the redesigned FreedomLine also prohibits

shifting; and when the truck is traveling at less than 35 mph and senses a decrease in speed, all shifting is prohibited. Contrary to plaintiff's argument however, the Court properly considers whether shifts are permitted during ABS activity, and does not look at special modes in a vacuum. In the case of the redesigned FreedomLine system, one downshift is permitted during an ABS event. The Court adopts the finding of no literal infringement by the Special Master

Under the doctrine of equivalents, plaintiff contends that the one-shift-down alteration from the original FreedomLine represents the same function, way, and result of avoiding dangerous downshifts as the '279 Patent. However, the '279 Patent contains an exacting claim term, prohibiting "all" shifts during an ABS event. To find that one downshift is the same as "prohibiting . . . all" gear change signals would be to effectively delete this limitation from Claim 15. See Freedman Seating Co. v. American Seating Co., 420 F.3d 1350, 1358 (Fed. Cir. 2005). In other words "all" means "all", and prohibiting all dangerous downshifts is not the equivalent of prohibiting all shifts.

The Court adopts the Special Master's finding of no literal infringement and no infringement under the doctrine of equivalents of Claim 15 by the redesigned FreedomLine system.

II. '350 Patent - "Touch Point" and "Approach Point"

A. Defendants' Petition for Review of Report's Denial of Summary Judgment of Invalidity

Defendants move for summary judgment of invalidity of claims 1-3, 5-6 and 8-9 of the '350 patent under 35 U.S.C. §§ 102 (anticipation) and 103 (obviousness).

Defendants rely on four prior art references, a declaration of Dr. Davis and claim charts

comparing the elements of the claims to each of the prior art references. Plaintiff opposes summary judgment, relying on the two declarations of Dr. Caulfield, each filed prior to the claim construction. The Special Master found that Dr. Caulfield's declarations create genuine issues of material fact as to what the prior art teaches to one of ordinary skill in the relevant art, which precludes summary judgment. As set forth below, this Court disagrees and grants summary judgment for defendants on this basis.

The invention claims to improve clutch responsiveness by defining clutch control parameters that correspond to a "touch point" and an "approach point." The adopted claim construction defines "touch point" at "a theoretical point at which the clutch plates just begin to touch." An "approach point" has been construed as "a point intermediate full disengagement and the touch point, preferably almost to the touch point." The broad construction given these claim limitations leaves the claims vulnerable to the prior art because the claims are not limited to the specific calibration technique disclosed in the patent.

The prior art references relied on by defendants are U.S. Patent 4,899,858 ("Cote"), U.S. Patent 4,899, 857 ("Tateno"), Published Japanese Patent Application 1-233127 ("Nakadani"), and SAE Technical Paper No. 84005 ("Watanabe"). There is no dispute that each reference is statutory prior art under 35 U.S.C. § 102(b). All the references teach methods for controlling an automated vehicle clutch. The references and the '350 patent all have the common goal of shortening the time it takes to move the clutch from a position where the clutch is fully disengaged from the shaft to the position where the clutch is fully engaged with the shaft. The references teach doing so

in two steps: the first step is to move the clutch rapidly to a position short of, but very near, contact with the shaft; and the second step is to move the clutch, upon command, into initial contact with the shaft whereby torque begins to be transferred. Thereafter, the clutch continues to move into further contact with the shaft, the movement being modulated to bring about further engagement with the shaft, up to full engagement and full torque transfer. Defendants contend that this two-step sequence is exactly what is done in the '350 patent, wherein the clutch first moves to an "approach point condition" followed by movement, on command, to a "touch point condition" as set forth in claims 1, 5 and 8. Defendants accurately characterize the sum of these claims.

1. Cote Anticipates Claims 1, 5, 8 and 9

The Cote patent is an earlier Eaton patent that Eaton submitted to the Patent Office during prosecution of the '350 patent. The Cote patent was considered by the Examiner and the '350 claims are presumed valid over the Cote patent. 35 U.S.C. § 282. The '350 inventors expressly incorporated the Cote patent by reference into the '350 specification as background teachings of how to determine touch point location and to use the touch point in controlling the clutch. "However, a patent may be found to be anticipated on the basis of a reference that had properly been before the patent examiner in the United States Patent and Trademark Office ("PTO") at the time of issuance." IPXL Holdings, L.L.C. v. Amazon.Com, Inc., 430 F.3d 1377, 1381 (Fed. Cir. 2005). Defendants assert invalidity of claims 1, 5, 8 and 9 as anticipated by Cote.

The Cote patent discloses two distinct points, one of "incipient" clutch engagement, and another of "almost incipient clutch engagement." Cote defines "incipient" as being almost at the point of contact. Moreover, Cote teaches that the

clutch preferably should assume the point of “almost incipient engagement” while awaiting a clutch engagement command. The Cote patent thus discloses two different points - a touch point and an approach point - which anticipates claims 1, 5 and 8 of the ‘350 patent. While plaintiff’s expert, Dr. Caulfield, concludes that Cote does not disclose an approach point or dwelling at an approach point, this conclusion is contrary to the evidence before the Court.

Claim 9 recites as follows:

The method of claim 8 wherein step (c) further comprises, upon determining that clutch engagement is required, causing said clutch to move rapidly to the touch point condition thereof and then causing further clutch engagement in a controlled and modulated manner.

Dr. Davis’ declaration points to Cote at col. 3, ll. 30-42 which teaches “the clutch actuators cause the clutch to move rapidly to the point of incipient, or preferably almost incipient, engagement and then move the clutch to a fully engaged position in a modulated manner . . .” This teaching, combined with claim 8 which has been held anticipated by Cote, anticipates claim 9. Claim 9 is also invalid under 35 U.S.C. § 102 as anticipated by Cote.

2. Nakadani Anticipates Claims 1 and 5

Defendants identify in Nakadani what they contend to be a “touch point” and an “approach point” and how they are determined. Defendants also identify in Nakadani the operation of the clutch which responds to the claims’ requirement of “disengaging” the clutch, followed by assuming and remaining in the “approach point condition” while “awaiting a clutch engagement command.” Defendants support their contentions with the Declaration of their expert, Dr. Davis, and the claim charts.

Claims 1 and 5 only require knowing the “approach point”, which is undisputedly known if it is located at a position at which torque is not transmitted from the engine to the transmission. Nakadani discloses a point, C2, that has zero torque, and it describes C2 as “a position where the engine power cannot be transmitted to the transmission side” Nakadani also teaches using its “approach point” in the same way as it is recited in claims 1 and 5 - shortening the distance the clutch has to move after receiving an engagement command.

Claim construction of “approach point” in this case is ‘a point intermediate full disengagement and the touch point, preferably almost to the touch point.’ Nakadani teaches C2, which is an approach point. Despite plaintiff’s counsel’s best efforts to characterize his Declaration, Dr. Caulfield fails to rebut defendants’ showing of invalidity.

3. Claims 2, 3 and 6 of ‘350 Patent Obvious

Claims 2, 3 and 6 of the ‘350 Patent are dependent claims, which recite an “input shaft retarding device”, i.e. a shaft brake. Claim 2 is representative, and provides:

The method of claim 1 wherein said transmission has a controllable input shaft retarding device (18) associated therewith, said value determined while said device is inactive.

Defendants contend that claim 2 is invalid as anticipated by Tateno, Nakadani and Watanabe, and that claims 2, 3 and 6 are all invalid for obviousness in view of the combination of Cote with any of Tateno, Nakadani and/or Watanabe.

With regard to claim 2, Dr. Davis’ declaration does not assert that any of Tateno, Nakadani or Watanabe teach a “controllable input shaft retarding device” as required by the claim, but that they teach “determining an approach point . . . without activating an

input shaft brake”. While the result of not “activating an input shaft brake” may be the same as not having such a brake, the claim expressly recites its presence. The law of anticipation is clear that every claim element must be present in a single reference to prove anticipation. Claim 2 is not anticipated under 25 U.S.C. §102.

With regard to claims 2, 3 and 6 being obvious under §103, Dr. Davis sets forth a detailed and persuasive analysis with appropriate claim charts explaining why those claims define a subject which would have been obvious to one of ordinary skill in the art at the time the invention was made. Dr. Davis explains why one skilled in the art would have been motivated to combine the prior art references, including Eaton’s Oltean patent, No. 5,337,874, which was referenced in the ‘350 patent specification, to achieve the claimed inventions of claims 2, 3 and 6.

Plaintiff’s response to Dr. Davis’ analysis and opinion relies on the report of Dr. Caulfield, dated March 31, 2006. Dr. Caulfield discusses claims 2, 3 and 6 at pages 6 and 7 of his report, but fails to even mention issues of obviousness. Dr. Caulfield does not address the Oltean patent (that patent is addressed only with regard to claims 1,5 and 8); fails to address the Cote reference in any meaningful way; and fails to address the issues of motivation to combine prior art teachings. Dr. Caulfield, in short, fails to raise any conflicting material issues of fact upon which to base a denial of summary judgment for obviousness. Cable Electric Prods. Inc. v. Genmark, Inc., 770 F.2d 1015, 1022-23 (Fed. Cir. 1985). Dr. Davis’ analysis, on the other hand, comports with well-established principles of obviousness law under 35 U.S.C. § 103, including Graham v. John Deere Co. of Kansas City, 383 U.S. 1 (1966), and more recently, KSR Int’l Co. v. Teleflex, Inc., 127 S.Ct. 1727 (2007).

Defendants have established invalidity of claims 2, 3 and 6 for obviousness under 35 U.S.C. §103 by clear and convincing evidence.

B. Plaintiff's Petition for Review of Report's Denial of Summary Judgment of Infringement

It is not necessary for the Court to reach the issue of infringement due to the finding of invalidity of the '350 patent. Dow Chem. Co. v. Halliburton Oil Well Cementing Co., 324 U.S. 320, 331 (1945), Ormco Corp. v. Align Tech., Inc., 463 F.3d 1299, 1313 (Fed. Cir. 2006).

III. '458 Patent - Rolling Start

A. Defendants' Petition for Review of Report's Grant of Summary Judgment to Plaintiff Finding Literal Infringement of Claims 5-6 and 16-17 by FreedomLine Transmission with SureShift Lever

The Report found literal infringement of claims 1 and 12, 3-6, and 14-17 of the '458 patent by the FreedomLine systems with a SureShift lever. Defendants object to the recommendation as to claims 5-6 and 16-17 only. Claims 5 and 16 require selection of an appropriate rolling start gear ratio such that the numerical ratio thereof is "substantially equal to" the quotient of said current engine speed divided by current output shaft speed, while claims 6 and 17 require that the numerical ratio be "substantially equal to" the quotient of engine idle speed divided by current output shaft speed. The infringement determination turns largely on the meaning of the phrase "substantially equal to," which is found in each claim.

Both experts use the test data provided by Dr. Caulfield, and while Dr. Davis does not challenge the test data, he does challenge the conclusions Dr. Caulfield draws from the data. For example, using the formulas provided in the patent claims relative to

claims 5 and 16, Dr. Davis determines that:

the test data cited by Eaton shows a post-shift current engine speed of approximately 1300 RPM, and a post-shift current output shaft speed of approximately 500 RPM. This results in a ratio of approximately 2.7:1, which is substantially different from the current engine speed divided by the current output shaft speed just before the shift. In particular, the ratio of pre-shift engine speed (approximately 750 RPM) divided by pre-shift output shaft speed (approximately 550 RPM) is approximately 1.4:1.

(Davis Declaration, October 2, 2006, ¶ 24).

The Special Master recognized that the claim phrase “substantially equal to” impacts the breadth of the claim by permitting claims to cover situations that are not exactly equal. The Court agrees with the Special Master’s conclusions that defendants have “presented no evidence or persuasive reasons why, in the context of the invention and claims here, the ratio differences are material to deciding infringement.” (Report at ¶ 29). The ratios computed by Dr. Davis require some context, such as prosecution history or prior art considerations, as suggested by the Special Master, to explain why the ratio differences may be material to deciding infringement.

The Court adopts the Report’s grant of summary judgment of infringement by SureShift, in favor of plaintiff.

B. Defendants’ Petition for Review of Report’s Denial of Summary Judgment Regarding Infringement Under the Doctrine of Equivalents by FreedomLine Transmission with SmartShift Lever

Defendants moved for summary judgment of noninfringement of the FreedomLine transmission when used with the SmartShift lever. The Report granted that motion with respect to literal infringement, but found material factual issues precluding defendants’ motion for no infringement under the doctrine of equivalents. After reviewing the evidence as to the SmartShift lever, this Court adopts the Report’s

finding of no literal infringement, but finds no issue of fact and therefore also grants summary judgment of non-infringement under the doctrine of equivalents.

The claimed invention of the '458 patent purports to be an improvement over the prior art systems by providing a control system for a semi-automated transmission where, "if the vehicle is in forward motion and the transmission is in neutral, then a single movement of the control lever in the upshift direction is interpreted and executed as a request for a direct shift into a rolling start ratio, determined as a function of current vehicle ground speed." '458 Patent, col. 2, ll. 36-45). Claim 1 of the '458 patent provides at step (3):

if said transmission is in neutral ($GR=N$) and said vehicle speed exceeds a minimum reference value ($OS>REF$),

- (a) automatically selecting operation in a rolling start mode of operation, wherein a single movement of said shift selection lever in the upshift direction is interpreted as an operator selection of a direct shift from neutral into an appropriate rolling start gear ratio . . .

Certain FreedomLine transmission systems are equipped with the SmartShift lever, which is attached to the steering column in the vehicle. To request an upshift with the SmartShift lever, the driver pulls the shift lever up toward the driver. (Dr. Davis decl., ¶ 61). The SmartShift lever also includes a slide selector, or D-N-R, switch on the body of the control lever. This switch allows the driver to select one of three positions corresponding to drive, neutral and reverse. If the switch is moved from neutral to drive while the vehicle is moving, the transmission will automatically shift into an appropriate gear. This is the function at issue.

According to defendants' expert, Dr. Davis, the SmartShift lever does not infringe

the '458 patent because it does not have a single movement of a lever in an upshift direction:

Instead of moving the lever forward, the switch on the lever is moved or slid along the lever in a clockwise direction. This movement from N to D is not a single movement of the lever and it is not in the upshift direction. Instead, and as my experience with the SmartShift lever and the manual confirm, single movements in the upshifts direction are completely ignored when the vehicle is in neutral. Because a rolling start gear is not selected when the driver moves the SmartShift lever in the upshift direction, step 3(a) is completely missing from the FreedomLine transmission systems equipped with SmartShift levers.

Dr. Caulfield's description of the operation of the SmartShift lever is not dramatically different. Dr. Caulfield explained in his deposition: "In a rolling start situation, the driver must "move the switch over to the right", from "N to D" to initiate a rolling start. (Caulfield dep., May 24, 2006, pp. 252-254). Dr. Caulfield testified that moving the switch over to the right in this way is "a single movement of the lever or equivalent to a single movement." Id. at p. 253.

Moving a switch to the right from N to D is accomplished by a movement of the driver's finger on a switch attached to the lever. In contrast, moving the shift lever in the upshift direction requires the driver to hold the entire lever in their hand and pull it toward the driver. The SmartShift does not require a movement *in the upshift direction*, which is a clear requirement of claim 1 of the '458 patent. This difference is substantial, requiring a different movement of a different component in a different direction.

The claimed invention is intended to simplify the request for a rolling start gear by using the same directional movement used to request an upshift. In the case of the SmartShift lever, an upshift is accomplished by the driver pulling the shift lever up, unless the vehicle is moving (rolling start), in which case the switch must be moved from

N to D. Dr. Caulfield's conclusion that the SmartShift system and the claimed invention are equivalent is contrary to the evidence in this case. The differences between the FreedomLine Smart Shift system and the claimed invention are substantial, and preclude a finding of infringement by equivalence.

IV. Conclusion

The Special Master's Report effectively served to clarify the issues, and the parties' responses to the Report fleshed out and provided perspective on the state of the evidence in this case. As described above, in some instances Special Master Davis perhaps gave undue weight to Dr. Caulfield's submissions, likely due to Caulfield's credibility as a witness at the claim construction hearings, and also out of an excess of caution in his role as Special Master. The Court appreciates the important role played by Special Master Davis. Although the Court has not adopted the Report in its entirety, the process using input from Special Master Davis has undoubtedly resulted in a better informed decision.

Now, therefore,

(1) Plaintiff's Motion for Summary Judgment of Infringement of U.S. Patent 4,899,279 claim 15 is GRANTED.

(2) Defendants' Motion for Summary Judgment of Non-Infringement of U.S. Patent 4,899,279 is GRANTED as to claim 15 only.

(3) Plaintiff's Motion for Summary Judgment of Infringement of U.S. Patent 5,624,350 is not decided.

(4) Defendants' Motion for Summary Judgment of Invalidity of U.S. Patent 5,624,350 is GRANTED.

(5) Plaintiff's Motion for Summary Judgment of Infringement of U.S. Patent 5,664,458 is GRANTED.

(6) Defendants' Motion for Summary Judgment of Invalidity and Partial Non-Infringement of U.S. Patent 5,664,458 is GRANTED as to partial non-infringement only.

The following issues of fact remain in this case:

(1) Whether claims 1 and 3 of the '279 patent are infringed by the redesigned FreedomLine system.

(2) The validity of claims 1, 12, 3-6 and 14-17 of the '458 patent.

Counsel for the parties are directed to set up a conference call with the court on June 6, 2007 at 10:00 a.m. to discuss the outstanding issues in this case.

It is so ordered.

Dated: May 31, 2007

S/George Caram Steeh
GEORGE CARAM STEEH
UNITED STATES DISTRICT JUDGE

CERTIFICATE OF SERVICE

Copies of this Order were served upon attorneys of record on May 31, 2007, by electronic and/or ordinary mail.

s/Josephine Chaffee
Deputy Clerk